

# 750 Watt Ku-Band High Efficiency Antenna Mount High Power Amplifier with Blockupconverter

**Green Power**  
by XICOM TECHNOLOGY



## FEATURES

- 13.75 to 14.5 GHz
- 300 watts linear power
- Rugged design operates to +60°C
- L-band BUC included
- Optional Linearizer
- High efficiency peak TWT
- Ethernet interface

The **XTD-750KHE-B1** is a highly compact, rugged antenna mountable power amplifier designed for high efficiency and long life. The **XTD-750KHE-B1** design uses high efficiency, dual-stage collector peak Traveling Wave Tubes (TWT) to fit a 750 watt rated amplifier into the package size previously offered as a 400 watt TWTA. Some benefits of this type of tube are: significantly reduced prime power consumption, lower internal operating temperatures, and reliability enhancement.

RF filters, cooling, and monitoring & control (M&C) systems are all self-contained within the High Power Amplifier (HPA). An ethernet M&C interface is included.

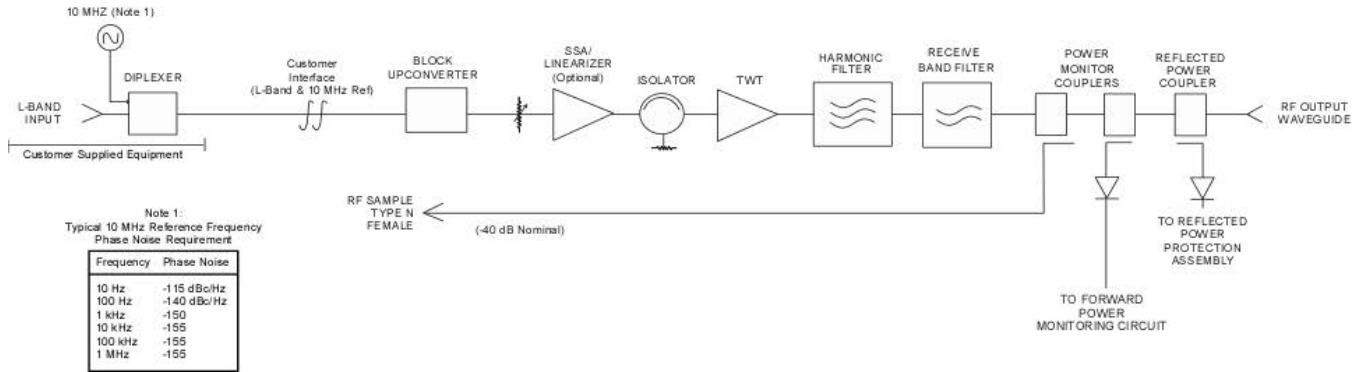
The **XTD-750KHE-B1** may be configured for single thread, redundant, or phase-combined operation.



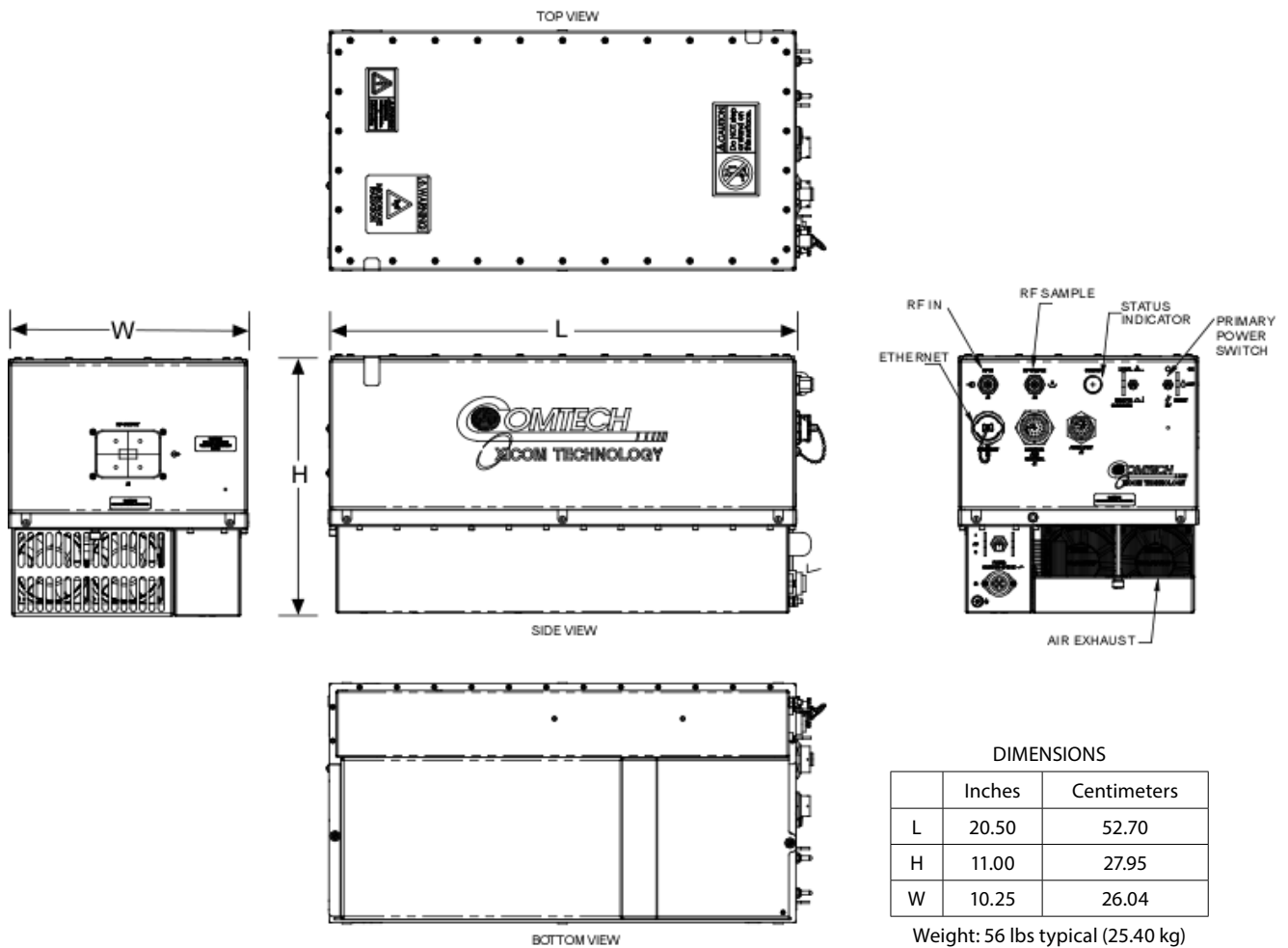
# PERFORMANCE SPECIFICATION

| Parameters   | XTD-750KHE-B1  |
|--|--|
| FREQUENCY RANGE  | 13.75 to 14.5 GHz  |
| Input Frequency  | 950 to 1700 MHz  |
| Reference Frequency  | 10 MHz   |
| OUTPUT POWER   |  |
| Peak TWT Power   | 750 Watts  |
| Maximum CW power ( $P_{MAX}$ )   | 355 Watts  |
| Linear Power ( $P_{LINEAR}$ )  | 300 Watts with optional linearizer<br>165 Watts without linearizer               |
| GAIN   |  |
| Large Signal (minimum)   | 70 dB  |
| Small Signal (minimum)   | 70 dB  |
| Attenuator Range (continuous)  | 30 dB, 0.1 dB steps  |
| Maximum SSG Variation Over   |  |
| Any Narrow Band  | 1.0 dB per 80 MHz  |
| Full Band  | $\pm 2.0$ dB   |
| Slope (maximum)  | $\pm 0.02$ dB/MHz  |
| Stability, 24 hr. (maximum)  | $\pm 0.25$ dB  |
| Stability, Temperature (maximum)                                       | $\pm 1.0$ dB over temperature range at any frequency                             |
| INTERMODULATION (maximum)<br>relative to the sum of two equal carriers | -25 dBc @ $P_{LINEAR}$   |
| SPECTRAL REGROWTH @ 1 SR offset  | -30 dBc @ $P_{LINEAR}$   |
| AM/PM CONVERSION (maximum)   | 2.5 deg/dB @ $P_{LINEAR}$  |
| HARMONIC OUTPUT (maximum)  | -60 dBc  |
| NOISE POWER (maximum)  |  |
| Transmit Band  | -70 dBW/4 kHz  |
| Receive Band   | -150 dBW/4 kHz<br>10.95 to 12.75 GHz   |
| GROUP DELAY (maximum)  |  |
| Bandwidth  | Any 80 MHz   |
| Linear   | 0.01 nS/MHz  |
| Parabolic  | 0.005 nS/MHz <sup>2</sup>  |
| Ripple   | 0.05 nS/Pk-Pk  |
| RESIDUAL AM NOISE (maximum)  | -50 dBc to 10 kHz<br>-20 (1.5 + logf) dBc 10 to 100 kHz<br>-85 dBc above 100 kHz |
| PHASE NOISE (maximum)  | IESS phase noise profile<br>AC fundamental -50 dBc<br>Sum of all spurs -47 dBc   |
| VSWR   |  |
| Input (maximum)  | 1.6:1  |
| Output (maximum)   | 1.3:1  |

# BLOCK DIAGRAM



# OUTLINE DRAWING



**XTD-750KHE-B1**



# PRIME POWER

90 to 264 VAC  
47 to 63 Hz, Single Phase  
1650 VA Typical @ P<sub>LINEAR</sub>  
0.95 Minimum Prime Power Factor



## ENVIRONMENT

|                                |  |
|--------------------------------|--|
| NONOPERATING TEMPERATURE RANGE | -50°C to +70°C                             |
| OPERATING TEMPERATURE RANGE    | -40°C to +60°C<br>(2°C/1000 Feet Derating) |
| HUMIDITY                       | Up to 100% Condensing                      |
| ALTITUDE                       | 10,000 Feet MSL Max.                       |
| SHOCK AND VIBRATION            | Normal Transportation                      |
| COOLING                        | Forced Air                                 |

## INTERFACE

| Type                       | Function   |  |
|----------------------------|--|--|
| LOCAL CONTROL              | Prime Power ON/OFF                                     | Local/Remote   |
|                            | Power Supply ON/OFF                                    | HV ON/OFF  |
| LOCAL STATUS               | Tri-Color LED:   |  |
|                            | Fault: Red   | Standby: Continuous Amber  |
|                            | HV ON: Green   | FTD: Flashing Amber  |
| REMOTE CONTROL             | HV ON/OFF  | Constant Power   |
|                            | Min/Max Power Alarm/Fault                              | Gain   |
|                            | Reflected Power Alarm/Fault                            | Fault Reset  |
|                            | Heater Standby ON/OFF                                  | Units (Watts, dBm, dBW)  |
| REMOTE STATUS              | Power Out  | Reflected Power  |
|                            | Helix Current  | Helix Voltage  |
|                            | Heater Hours   | Beam Hours   |
|                            | Attenuator Setting                                     | Units Selection  |
|                            | TWT Temperature  | Faults:  |
|                            |  | High VSWR<br>High Voltage<br>Helix Current<br>TWT Temperature<br>10 MHz Lock |
| FORM C DRY CONTACT CLOSURE | Summary Fault  |  |
| COMPUTER PORT              | Hardware Interface:<br>RS-232 & RS-422/485<br>Ethernet | Xicom Command Set:<br>ASCII Commands   |
| RF MONITOR PORT            | -43 dB Coupling Value (nominal.)                       |  |

## OPTIONS

- Remote External Controller
- 1:1, 1:2, 1:N Redundancy
- Linearizer
- Alternate Frequencies Available

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